



May 25, 1988

Mr. Gerald Schurtz  
Manager Environmental Engineering  
Kennecott Explorations (Australia) Ltd.  
P.O. Box 11248  
Salt Lake City, Utah 84147

Dear Mr. Schurtz:

Re: Mining and Reclamation Plan Review, Barneys Canyon Project, M/035/009,  
Salt Lake County, Utah

The Division has completed its review of your latest May 9, 1988 submittal of the revised hydrology sections for the proposed Barneys Canyon mining project. This letter contains the hydrology review comments which were not contained in our letter dated May 13, 1988.

A summary of the review comments are detailed below:

1. Drawing no. 2-00-202, entitled Drill Hole Test Pit Locations in Relation to the Leach Pads and Ponds, indicates that the combined capacity of the pregnant and barren solution ponds equals 8,000,000 gallons. B.P. Minerals' April 24, 1988, response to the State Bureau of Water Pollution Control indicates a new combined pond capacity of 10,000,000. Please rectify this discrepancy in the revised text and/or revised drawings.
2. On page 23 of the May 5, 1988 resubmission, the text indicates that Barneys Creek is intermittent, but perennial over a two-mile stretch adjacent to the Barneys Canyon project area. Is Barneys Spring (S-318) the source of water for this perennial stretch? Is there a current use or water right filed on this surface water source? Are there any water quality or flow records available for this perennial stretch? What are the potential impacts to this stream as a result of the proposed mining project? Are there any proposed monitoring plans for this reach? Bancroft Spring is located within 900 feet south of the Barneys Canyon project. The water quality analyses presented in the NOI indicated acceptable water quality. What is the geologic contact (origin) of this spring? What is the potential for local aquifer recharge from this spring and the perennial stretch of Barneys Canyon Creek?



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3. On pages 25-33 of the application, a number of different scenarios are presented which are intended to be representative of the project area groundwater hydrologic conditions. The data presented indicates a significant degree of variability concerning the regional and local groundwater aquifer hydrologic characteristics. The Division suggests that any additional groundwater monitoring wells drilled have sufficient pump tests performed to support and confirm the local groundwater conditions for the Barneys Canyon and Mel-Co project sites.
4. Figures 3.4-1, 3.4-2 (and other diagrams as appropriate), should be updated to reflect the most recent revised design configurations.
5. The text on page 74 should be revised to reflect the design change concerning the removal of the upper layer of solution collection pipes on top of the liner blanket. (See page 2, item #7 of B.P. Minerals', April 29, 1988 letter to Mr. Don Osler, BWPC.)
6. The text on page 33 should be revised to refer the reader to the updated Appendix B for water quality data obtained for Bancroft Spring.
7. The text on pages 75-76 should be revised to reflect the design changes which have reduced the number of solution pond pairs from three to two.
8. The text on page 77 should be revised to reflect the change in primary liner thickness from 40 to 60 mils. The six inch layer of sand layer between the liners has been changed to a synthetic drainage net underlain by geofabric and 12 inches of clay. The text should be revised accordingly.
9. It is assumed that Impoundment S, on Plate VI of the revised Reclamation Treatments Map, will also have a free flowing culvert through the railway embankment upon site reclamation. This was not clearly identified on the map as were the other railway embankment impoundments. Please indicate otherwise if this is not the operator's intent.
10. Will the pipeline embankment of Impoundment P2 have a culvert that will be open to permit free drainage upon reclamation, or is it intended to remain as an impounding structure?

Was it the operator's intent to drop the typical placement diagram for the Impoundment P Standpipe from the revised hydrology plans received May 9, 1988? Is another spillway design intended for Impoundments P1 and P2? Please clarify.

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11. According to the stage capacity curves for Impoundments R and S, there may not be sufficient storage capacity for the 10 year - 24 hour storm volume without discharge through the existing drainage culverts. Are these culverts currently plugged and would the Impoundment P Standpipe diagram design apply to these impoundments?
12. Impoundment T is shown on Plate III as an impounding structure. Plate VI indicates that impounded drainage will be free flowing upon reclamation of the site. The impounding capacity of this structure could not be found in the text. A stage capacity curve was also not provided for this impoundment. The Impoundment Containment Volumes Summary Table in Appendix D-1 also did not include reference to this impoundment. Was this an oversight or intentional because of its relatively small watershed drainage area?
13. Several inconsistencies exist between the Impoundment Containment Volumes Summary Table and the written text which should be clarified. The areas of conflict are:
  - (a) The table indicates Impoundment Q has a 39 AF capacity. On page 97 of the text, the capacity is presented as 26 AF.
  - (b) The table lists the capacity of Impoundment R as 22 AF. Page 96 indicates that its capacity is 11.3 AF.
  - (c) The text on page 96 indicates that the 10 year - 24 hour runoff volumes for Impoundments P1 and P2 are 20 AF and 45 AF respectively. The summary table indicates these values are the 100 year -24 hour runoff volumes. This typo should be corrected when revising the text.
  - (d) The last sentence on page 92 of the May 5, 1988 revised text refers to Impoundment K, which no longer exists. This sentence should be deleted from the text.
  - (e) The 10 year - 24 hour storm runoff volume for Impoundments S and K (47 AF), exceeds the total impoundment storage capacity (9 AF), by 38 AF. Since Impoundment K no longer exists in the revised plan, it is assumed that this storage capacity value is for Impoundment S.

If these runoff values are accurate, then the discharge structure for Impoundment S must be designed to contain the minimum design flow and safely discharge or store the excess runoff volume from larger storms. Otherwise, this table should be revised to reflect the actual disturbed watershed acreage runoff and sediment Impoundment S is likely to receive during operations and after reclamation.



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14. Appendix D-II contains tables which give the design specifications for the channels and roadside ditches to be constructed. It is assumed that the slope percentages listed were for the culvert sections to be installed on the project site. Because of the steepness indicated for many of the culvert grades, particular attention should be given to see that adequate outlet protection is provided to minimize channel scour.
15. The last sentence of paragraph two on page 97, indicates that Impoundment J watershed drainage will be reduced by 14 percent. It is assumed that this should read Impoundment S instead of J.
16. On page 102, the operator indicates that any intercepted pit water will be pumped as necessary to control the water levels in the pit(s). If more water is intercepted than can effectively be used for road dust suppression, will the remainder be used as make-up water for the leach solution ponds, or will a discharge permit be necessary?
17. The first sentence on the revised page 120 is missing. This page should be revised again to make the paragraph read properly.
18. The Division will defer to the State Department of Health, Bureau of Water Pollution Control (BWPC) for the final design requirements for the leach pad configurations, the solution ponds, leak detection system, and groundwater monitoring plan, as required. In this regard, the operator must provide all updated design changes and plans that are required and approved by the BWPC to this office to amend the application.

Variance Request - Impoundments & Drainages, Sections 6.1 & 6.4, pgs. 124-126

A variance from rules M-10(3), Impoundments; M-10(8), Drainages; and M-10(13), Dams is requested for the small impoundments created by the crusher sites and associated roadways, the 6280 dump impoundment, and the impoundment created by the pipeline fill between the leach pads. We concur with your assessment that these impoundments will serve as needed sediment control basins and provide a beneficial post mining land use. The variance requests for both impoundments are hereby granted on the condition that all applicable approvals are obtained from the State Engineer's Office.

Variance Request - Revegetation of Open Pits, Section 6.3, pg. 126

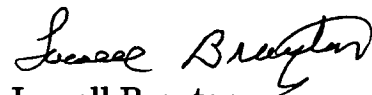
A variance to topsoiling and revegetation of the two open pits is approved.



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Please provide any updated information in the form of replacement pages. It is important that any additions or changes be incorporated into all portions of the plan that are affected by the change. Thank you for your patience and cooperation in completing this permitting action. Please feel free to contact me or my staff should you wish to discuss any of the above items in detail.

Sincerely,



Lowell Braxton  
Mineral Resource Development  
and Reclamation Program

dwh  
cc: B. Bayer, JBR  
C. Dietz, Water Pollution Control  
F. Filas, DOGM  
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